Journal of Applied Economic Sciences
Volume IV/ Issue 1(7)/ Spring 2009

ACTIVITY BASED COST FROM THE PERSPECTIVE OF COMPETITIVE ADVANTAGE

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Abstract

Activity-Based Costing (ABC) is a methodology that measures the cost and performance of activities, resources, and cost objects such as products and services to provide more accurate cost information for managerial decision making.

ABC represents an alternative paradigm to traditional cost accounting system and it often provides more accurate cost information for decision making such as product pricing, product mix, and make-orbuy decisions. ABC models the causal relationships between products and the resources used in their production and traces the cost of products according to the activities through the use of appropriate cost drivers.

Keywords: Activity-Based Costing, management, performance, resources

JEL Classification: M11, D7

1. Introduction

In the last several years we can see a dramatically growing importance of the high quality information for the company management decision. The area of the cost management systems used for costing and budgeting is one of the most important areas of company financial management. According to growing competition on the globalized markets, companies need the information about the profitability of a product, customers or markets, about cost consumed by different activities and other different areas where the costs have the important role. If the company wants to keep in touch with the strongest competitors, its costing system has to implement the ability to react to changes in product and activities structure and feature these changes in the product costing. If the costing system does not change and does not conform with process, activities and product structure dynamics, than the costing system will become obsolete and will produce the incorrect information about the company cost.

Modern process and activity based costing systems has been developed in early 1980's and are mostly used by US companies and the European top companies.

Activity – Based Costing (ABC) is a method for developing cost estimates in which the project is subdivided into discrete, quantifiable activities or a work unit. The activity must be definable where productivity can be measured in units (e.g., number of samples versus manhours). After the project is broken into its activities, a cost estimate is prepared for each activity. These individual cost estimates will contain all labor, materials, equipment, and subcontracting costs, including overhead, for each activity.

Each complete individual estimate is added to the others to obtain an overall estimate.

Contingency and escalation can be calculated for each activity or after all the activities have been summed. ABC is a powerful tool, but it is not appropriate for all cost estimates.

2. The Genesis of Activity Based Costing

Activity-Based Costing shows - or at least attempts to show - the impact of changes in the costs and yields of every activity on the results of the whole. Peter F. Drucker

In the business literature, emphasis on business activities and processes can be traced to Michael Porter's (1980) "value chain" framework for analyzing sources of firms' competitive advantage. During the same time period, Porter's colleagues at Hardvard Business School, Robin

Cooper and Robert Kaplan, discovered firms that had modified traditional cost accounting systems to better represent the flow of resources to the products and services that consumed them. Traditional costing systems are typically designed to allocate overhead costs from the general ledger to an entity with reporting responsibility (e.g. cost centers, profit centers) and from that entity to the products or services that it produces. The latter allocation of overhead costs to products is tipically accomplished by prorating overhead costs on the basis of direct labor hours, material costs, or another measure of unit variable costs.

The cost systems that Cooper and Kaplan identified bore a strong resemblance to Porter's value chain – with overhead costs traced from the general ledger to a *business activity*. Business activities often cross boundaries of the reporting and responsibility structure of the organization. Moreover, unlike traditional systems, activity costs were subsequently traced to products or services that place demands on the activity using "cost drivers" to assign costs in proportion to the level of demand for the activity. In documenting these systems, Kaplan and Cooper constructed a theory of resource consumption and suggested an approach, known as *Activity-Based Costig* (ABC) for representing resource provision and consumption in cost accounting systems. These representations led to prescriptions for managing the firm's value chain through *Activity-Based Management* (ABM).

Today, most managers are aware of activity based costing as a management information tool and many have direct involvement in the implementation of ABC or have access to ABC data. Technological advances, such as installation of *Enterprise Resource Planning Systems* (ERPs), integration of disparate databases into easily queried "data warehouses", and development of powerful data analysis tools, have facilitated the technical demands that ABC places on organization. However, these advances have generally not dealt with a basic finding of this study – effective ABC systems are often defined, not by the accuracy of the cost data, but by their ability to answering pressing questions.

3. Activity-Based Costing – A Cost Management Tool

Activity-Based Cost (ABC) is a tool for cost management. Activity-Based Management seeks to portray a company as a series of activities which are related to customer desires and cost. Activity-Based Cost is a process for measuring the cost of the activities of an organization. Activities within an organization are identified and an average cost is associated with each activity. The total cost of a product is the sum of the costs of activities required to bring forth, sustain, and retire the product. The cost of an activity for a product is defined as the average cost of the activity times the number of times the activity is required for that product.

Turney (1989) notes that *Underlying ABC is the assumption that activities consume resources and products consume activities. Activities include establishing vendor relations, purchasing, receiving, disbursing, setting up a machine, running the machine, reorganizing the production flow, redesigning the product, and taking a customer order. The performance of these activities triggers the consumption of resources that are recorded as costs in accounts. The activities are performed in response to the need to design, produce, market, and distribute products*.

Appropriately applied, ABC provides a far more accurate portrayal of cost than previous accounting methods. Given a better understanding of cost, management can make far better decisions in terms of competitive advantage. Furthermore, the improved understanding and localization of cost can be used to eliminate low value high cost activites and hence reduce cost. It is thus an aid to business process reengineering

Cooper and Kaplan (1992) show how activity-based costing permits the very important distinction between resource usage and resource spending. The difference is unused capacity. Elimination of this unused capacity permits costs to be reduced. Unfortunately, they fail to note the necessity to take into account the statistical variation within the system which can lead to the inability to supply near peak demands and the necessity to ensure that associated downsizing does not reduce either product or enterprise quality. Failure to meet demand and reduction in product quality can lead to revenue reductions which can generate a net loss in profit over the future. Reduction in enterprise quality can increase the average cost of a number of activities to the point that the net cost reduction is negative. Cost and quality are tightly linked within the dynamic stochastic nature of the business system.

Turney (1992) illuminates important nontemporal links between cost and enterprise quality. He also illustrates important relations between resources, resource drivers, activities, activity drivers, processes, enterprise performance (enterprise quality characteristics), cost drivers, and cost. He also notes that *Cost and non-financial information join forces to provide a total view of the work done ....*

This is the core concept upon which paramatric cost analysis and theoretical cost analysis have been based since at least the early 1960s.

Activity-Based Cost is a special form of function cost analysis where the cost of the functions of the system to bring forth, sustain, and retire the product are measured, as opposed to the functions of the product measured in value engineering.

ABC can also be used as the measurement tool for transaction cost economics by defining the activities to be those providing the desired transactions as outputs and using the number of transactions as the cost driver. Note that activities and transactions form the nodes and links of a network with activity cost and number of transactions being the associated measures. This observation links cost to graph theory and network topology.

The definition of accounting supplied by Zlatkovich, *et al.* (1966) is *the process of identifying, measuring, and communicating economic information to permit informed judgements and decisions by users of the information.*

This definition leaves plenty of room for the application of mathematical techniques within accounting. However, the practice of accounting limits itself to numbers, as opposed to equations and coordinate systems. It only took the application of mathematics, coupled with the scientific experiment, to transform physics from an anecdotal practice into a science.

From a mathematical perspective, we can consider the activity costs to form a coordinate system which describes the means which the enterprise uses to bring forth, sustain, or retire a product. There are also other perspectives of value to management. Following Kaplan (1988) we suggest that one cost perspective is not enough. For example, we place constraints on the organization to ensure timeliness compliance, cost compliance, and quality compliance for the customer. How much do those constraints cost? This triple of compliance costs is a very useful coordinate system. Yoshikawa, Innes, and Mitchell (1994) use function analysis to develop a transformation from an activity coordinate system to the coordinate system associated with this compliance triple. Another common coordinate system is that which defines the cost of each part within a product. The mappings performed to obtain part cost or functin cost from the activities consumed by the part or function are common, but unidentified, coordinate transformations.

The existence of these coordinate systems and transformations between them suggests that the mathematical concept of coordinates could play as big a role in the future of cost as it has played in the development of physics.

ABC is a methodology that measures the cost and performance of activities, resources, and cost objects to provide more accurate cost information for managerial decision making.[1] ABC is not an accounting exercise, but rather a methodology that produces a bill of activities that describes the cost buildup for individual products, services, or customers.[2] By recognizing the causal relationships among resources, activities, and cost objects such as products or customers, ABC allows one to identify inefficient or unnecessary activities and opportunities for cost reduction or profit enhancement.

The basic concept of ABC is that activities consume resources to produce an output (Figure 1). Expenses should be separated and matched to the level of activity that consumes the resources. Speciafically, the expenses that are needed to produce individual units of a particular service or product should be separated from the expenses that are incurred to produce different products or services or to serve different payers.

[1] Turney, Peter B.B., (1992), *What an ABC Model Looks Like*, in: *Journal of Cost Management 5*, no. 4 , Winter, pp. 54

[2] Kaplan, Robert S., (1992), *In Defense of Activity-Based Cost Management*, in: *Management Accounting 74*, no. 5, November, pp. 58

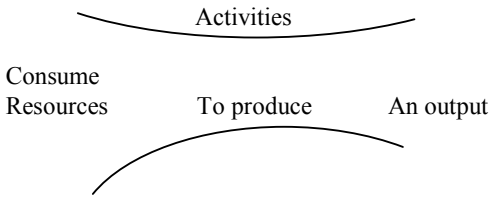

Figure 1. Theory of Resource consumption

Source: Copyrighted Material, Baker, Judith, J., (1998), *Activity Based Costing and Activity – Based Management for Health Care,* Hardcover,

The ABC approach differs from the traditional approach because of its fundamental concentration on activities. An ABC approach uses both financial and nonfinancial variables as bases for cost allocation. A typical ABC approach utilizes more indirect cost pools than does the traditional approach and uses a greater number of cost drivers as cost allocation bases.

As shown in Figure 2, there are two views of ABC: a cost assignment view and a process view.[3] The cost assignment view assigns costs to the significant activities of an organization.

Activities are then assigned to a cost object that uses the activities such as a product or customer. The process view provides operational intelligence about the processes of an organization. A process is a series of activities that are linked together to achieve an objective. The process view provides information about cost drivers and performance measures for each activity or series of activities in a process.

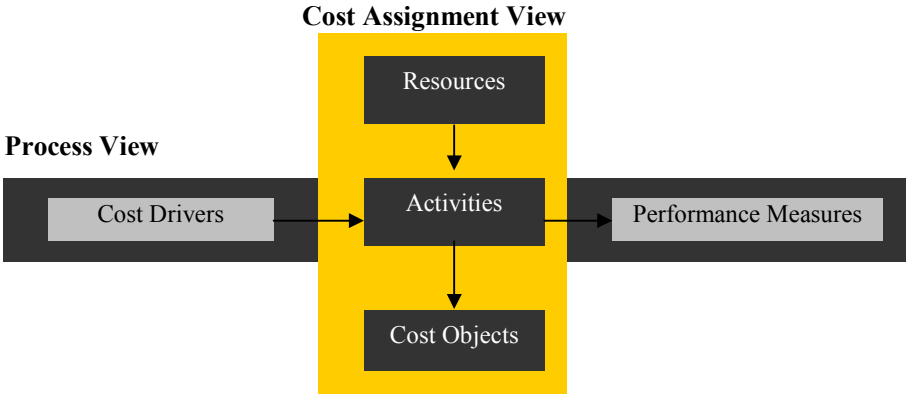

Figure 2. The ABC Model

Source: Turney, Peter B.B., (1991), *Common Cents: The ABC Performance Breakthrough,* Hillsboro: Cost Technology

The cost assignment view is comprised of three building blocks: resources, activities, and cost objects (Figure 2). Resources are economic elements that are the sources of cost. In a logistics operation, resources can include direct labor, direct material, and indirect costs (e.g., overhead and management salaries). Activities are the processes or procedures that produce work. Logistics activities, for example, can include transportation, distribution, warehousing, order processing, and customer service. Since activities use resources, they are connected to activities via resource drivers

[3]Turney, Peter B.B., (1991), *Common Cents: The ABC Performance Breakthrough,* Hillsboro: Cost Technology, pp. 20

that approximate the use of resources by activities (e.g., square footage, percent of effort, etc.). Each resource that is traced to an activity becomes a cost element in an activity cost pool that measures the total cost associated with an activity. This provides a better understanding of why resources are used. The information provided can help identify which activities consume the most resources and where cost reduction opportunities may exist.

The next step after assigning resources to activities is to trace the activities to cost objects. A cost object is typically a product, product line, or customer, so it is the reason why work is performed. Activity drivers measure the use of activities by the cost object, thus linking activities to cost objects. The total cost of the cost object is the sum of all the activity costs used by the cost object. This process provides economic information to help in analyzing decisions such as pricing, product mix, sourcing, product design, and improvement efforts.

As shown in Figure 2, three main building blocks comprise the process view: cost drivers, activities, and performance. Cost drivers determine why and how much work is required to perform an activity or a chain of activities.

A customer order, for example, initiates the order processing chain of activities - the "why". The size of the customer order determines how much work is required - the "effort". Cost drivers include both internal factors related to a specific activity and factors related to prior activities. Each activity in a series is a customer of a prior activity. Activities work together in an internal customer chain to provide value to the external customer.

Cost drivers are important because they reveal opportunities for improvement. A defect part received from a supplier, for example, will require correction activity to correct the problem, thereby expending more effort and resources. A quality certification program could help reduce a supplier's defect rate and thus reduce total costs of both the buyer and supplier.

Performance measures identify how well an activity is performed. Typical performance measures include activity efficiency, time required to complete an activity, and quality of work. Generally, the longer it takes to perform an activity, the greater the resources used and overall costs. Likewise, poor quality usually results in the use of more resources (e.g., scrap and rework in manufacturing organizations) and higher overall costs. The objective is to use this information to help improve performance and increase the value of products and services.

4. Continuous Improvement

The implementation of ABC can make the employees understand the various costs involved. This will then enable them to analyze the cost, and to identify the activities that add value and those that do not add value. Finally, based on this, improvements can be implemented and the benefits can be realiyed. This is a continuous improvement process in terms of analyzing the cost, to reduce or eliminate the non value added activities and to achieve an overall efficiency.

ABC has helped enterprises in answering the market need for better quality products at competitive prices. Analyzing the product profitability an customer profitability, the ABC method has contributed effectively fot the top management's decision making process. With ABC, enterprises are able to improve their efficiency and reduce the cost without sacrificing the value for the customer. Many companies also use ABC as a basisi for a balanced scorecard.

This has also enabled enterprises to model the impact of cost reduction and subsequently confirm the savings achieved. Overall, Activity-Based Costing is a dynamic method for continuous improvement. With Activity-Based Costing any enterprise can have a built-incompetitive cost advantage, so it can continuously add value to both its stakeholders and customers.

The implementation of ABC is not easy – not an ABC.

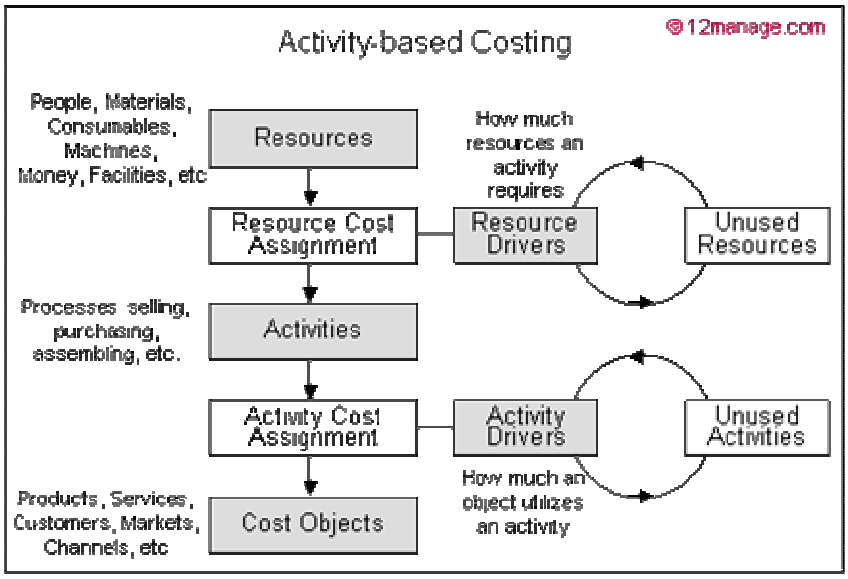

Figure 3. Activity-Based Costing

Source: 12manage

5. Conclusion

Activity-Based Costing (ABC) is a methodology that produces a bill of activities for cost objects such as individual products, services, or customers by measuring the cost and performance of activities and resources. It provides more accurate cost information than traditional cost accounting systems by recognizing the causal relationships among resources, activities, and cost objects.

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